James R. Broach

CURRICULUM VITAE

Social Security #: 431-88-8448 **Date of Birth:** 12/28/47

Education:

1969 Yale University
B.S. in Chemistry, *cum laude*

1973 University of California, Berkeley
Ph.D., Department of Biochemistry
Dr. Bruce Ames, thesis advisor

Professional Experience:

5/01 - present	Associate Director, Lewis-Sigler Institute for Intergrative Genomics
7/86 - present	Professor, Princeton University
9/92 - 6/99	Director of Research, Cadus Pharmaceuticals Tarrytown, NY
9/84 - 6/86	Associate Professor, Princeton University
7/83 - 8/84	Associate Professor, State University of New York at Stony Brook
7/79 - 7/83	Assistant Professor, State University of New York at Stony Brook
8/77 - 7/79	Staff Scientist, Cold Spring Harbor Laboratory
1/76 - 7/77	Postdoctoral Fellow with R.F. Gesteland, Cold Spring Harbor Laboratory
1/74 - 12/76	Postdoctoral Fellow with R.K. Mortimer, University of California at Berkeley, Division of Medical Physics

1999 – present	Member, NIH Genomics Study Section
1995	Chairman, MidAtlantic Yeast Meeting
1994 - present	Fellow, American Academy of Microbiology
1993	Chairman, Extrachromosomal Elements Gordon Conference
1992-1996	Chairman, ATCC Molecular Biology Advisory Committee
1991	CoChair, Extrachromosomal Elements Gordon Conference
1991 – 2000	Editor, *Molecular and Cellular Biology*
1989 - 1992	Steering Committee, GSA National Yeast Genetics Meetings
1/89 - present	Life Science Research Foundation, Director
1/86 - present	Life Science Research Foundation, Peer Review Committee
9/88 – 9/96	Organizer, New Jersey Area Fungal Meetings
1/85 - 1/90	Associate Editor, *Cell*
1/85 - 1/89	Associate Editor, *Molecular and Cellular Biology*
6/84	Co-organizer, Banbury Conference on Yeast Expression Vectors
6/83 - 6/87	Member, NIH Genetics Study Section
2/83, 12/98, 9/99	*Ad hoc* member, NIH Study Sections
1979, 1977	Co-Organizer, Cold Spring Harbor Yeast Molecular Biology Meeting

Fellowship and Scholarships:

1983 - 1987	American Heart Association Established Investigator
1976 - 1977	NCI Postdoctoral Fellow
1974 - 1975	American Cancer Society Postdoctoral Fellow
1969 - 1973	United States Public Health Service Trainee

Patents

Fowlkes, D. M., Broach, J, Manfredi, J, Klein, C., Murphy, A.J., Paul, J., and Trueheart; J., US 5,789,184: Yeast cells engineered to produce pheromone system protein surrogates, and uses therefor. (1998)

Fowlkes, D. M., Broach, J, Manfredi, J, Klein, C., Murphy, A.J., Paul, J., and Trueheart; J., US 5,876,951: Yeast cells engineered to produce pheromone system protein surrogates and uses therefor. (1999)

Broach, J.R., Manfredi, J.P., and Trueheart, J. US 6,001,553: Functional expression of mammalian adenylyl cyclase in yeast. (1999)

Publications:

A. Research Articles

1. Ciesla, A., Salvatore, F., Broach, J.R., Artz, S.W., and Ames, B.N., (1975) Histidine Regulation in *Salmonella typhimurium*, XVI Sensitive Radiochemical Assay for Histidinol Dehydrogenase. *Analytical Biochemistry* **63**, 44-55.

2. Artz, S.W., and Broach, J.R., (1975) Histidine Regulation in *Salmonella typhimurium*, an Activator-Attenuator Model of Gene Regulation. *Proc. Natl. Acad. Sci., USA* **72**, 3453-3457.

3. Broach, J.R., Neumann, C., and Kustu, S., (1976) Mutant Strains (*nit*) of *Salmonella typhimurium* with a Pleiotropic Defect in Nitrogen Metabolism. *J. Bacteriol.* **128**, 86-98.

4. Hooper, J.E., Broach, J.R., and Rowe, L.B., (1978) Regulation of the Galactose Pathway in *Saccharomyces cerevisiae*. Induction of Uridylyl Transferase mRNA and Dependence of *GAL4* Gene Function. *Proc. Natl. Acad. Sci., USA* **75**, 2878-2882

5. Petes, J., Broach, J.R., and Wensink, P., Hereford, L., Fink, G.R. andBotstein, D., (1978) Isolation and Analysis of Recombinant DNA Molecules Containing Yeast DNA. *Gene* **4**, 37-49.

6. Broach, J.R., (1979) Galactose Regulation in Saccharomyces cerevisiae: The Enzyme Encoded by the GAL 7, 10, 1 Cluster are Coordinately Controlled and Separately Translated. *J. Mol. Biol.* **131**:41-53.

7. Broach, J.R., Atkins, J.F., McGill, C., and Chow, L., (1979) Identification and Mapping of the Transcriptional and Translational Products of the Yeast Plasmid, 2μ Circle. *Cell* **16**, 827-839.

8. Broach, J.R., Strathern, J.N. and Hicks, J.B., (1979) Transformation in Yeast: Development of a Hybrid Cloning Vector and Isolation of the CAN1 Gene, *Gene* **8**, 121-133.

9. Broach, J.R., and Hicks, J.B., (1980) Replication and Recombination Functions Associated with the Yeast Plasmid, 2mu Circle. *Cell* **17**, 501-508.

10. Broach, J.R., and Hartley, J., (1980) Replication Functions Associated with the Yeast Plasmid 2μ Circle In Mechanistic Studies of DNA Replication and Genetic Recombination. ICN-UCLA Symposia on Molecular and Cellular Biology, Vol. XIX. eds. Bruce Alberts and C. Fred Fox; Academic Press, New York, NY, pp. 389-398.

11. Hicks, J.B., Strathern, J.N., Klar, A., and Broach, J.R. (1980) Transcriptional Regulation of the Mating Type Cassettes of Yeast. *Nature* **289**, 239-244.

12. Broach, J.R., Guarascio, V.R., Misiewicz, M.H., and Campbell, J.L. (1981). Replication of the Yeast Plasmid, 2μ Circle. In Molecular Genetics of Yeast (von Wettstein, D., Friis, J., Kielland-Brandt, and Stenderup, A., eds.) Alfred Benzon Symposium 16, pp. 227-241.

13. Broach, J.R., Friedman, L.R., and Sherman, E. (1981) Correspondence of Yeast UAA Suppressors to Cloned $tRNA_{UCA}^{ser}$ Genes. *J. Mol. Biol.* **150**, 375-387.

14. Broach, J.R. (1981) The Yeast Plasmid, 2μ Circle In The Molecular Biology of the Yeast *Saccharomyces*. (J. Strathern, E. Jones, and J.R. Broach, eds.) Cold Spring Harbor Laboratory Press, pp. 445-470.

15. Broach, J.R. (1981) Genes of *Saccharomyces cerevisiae* In The Molecular Biology of the Yeast Saccharomyces. (J. Strathern, E. Jones, and J.R. Broach, eds.) Cold Spring Harbor Laboratory Press, pp. 653-727.

16. Broach, J.R., Guarascio, V.R. and Jayaram, M., (1982) Recombination in the Yeast Plasmid, 2μ Circle, is Site Specific. *Cell* **29**, 227-234.

17. Falco, C., Li Y.-Y., Broach, J.R. and Botstein, D., (1982) Genetic Properties of Chromosomally Integrated 2μ Plasmid DNA in Yeast. *Cell* **29**, 573-584.

18. Broach, J.R. (1982) Construction of High Copy Yeast Vectors Using 2-μm Circle Sequences. *Methods in Enzymology: Recombinant DNA* (R. Wu, L. Grossman and K. Moldave, eds.) **101**, 307-324.

19. Broach, J.R. (1982) The Yeast Plasmid, 2 μ circle *Cell* **28**, 202-203.

20. Jayaram, M., and Broach, J.R. (1983) The Yeast Plasmid 2mu Circle Promotes Recombination Within the Bacterial Transposon Tn5. *Proc. Natl. Acad. Sci.*, USA **80**, 7264-7268.

21. Broach, J.R., Li, Y.-Y., Feldman, J., Jayaram, M., Abraham, J., Nasmyth, K.A., and Hicks, J.B. (1983) Localization and Sequence Analysis of Yeast Origins of Replication. *Cold Spring Harbor Symp. Quant. Biol.* **47**, 1165-1174.

22. Abraham, J., Feldman, J., Nasmyth, K.A., Strathern, J.A., Klar, A.J.S., Broach, J.R., and Hicks, J.B. (1983) Sites Required for Position-Effect Regulation of Mating Type Information in Yeast. *Cold Spring Harbor Symp. Quant. Biol.* **47**, 989-998.

23. Jayaram, M., Li, Y-Y, and Broach, J.R. (1983) The Yeast Plasmid 2 Micron Circle Encodes Components Necessary for its High Copy Propagation. *Cell* **34**, 95-104.

24. Broach, J.R., Li, Y-Y., Wu, L.C.-C., Jayaram, M. (1983) Vectors for High-Level, Inducible Expression of Cloned Genes in Yeast In *Experimental Manipulation of Gene Expression* (M. Inouye, ed.) New York: Academic Press, pp. 83-117.

25. Jayaram, M., Li, Y.-Y., McLeod, M., Broach, J.R. (1983) Analysis of Site-Specific Recombination Associated with the Yeast Plasmid 2 Micron Circle. In *Mechanisms of DNA Replication and Recombination* UCLA Symposia on Molecular and Cellular Biology (Cozzelli and Fox, eds.) Alan R. Liss, Inc., New York, NY pp. 685-694.

26. Broach, J.R. (1984) The Effect of Interconversion on Expression of the Yeast Plasmid 2 Micron Circle. In *Yeast Molecular Biology - Recombinant DNA* (M.S. Esposito, ed.) Noyes Publications, NJ pp. 93-112.

27. Feldman, J.B., Hicks, J.B., and Broach, J.R. (1984) Identification of Sites Required for Repression of a Silent Mating Type Locus in Yeast. *J. Mol. Biol.* **178**, 815-834.

28. Powers, S., Kataoka, T., Fasano, O., Goldfarb, M., Strathern, J., Broach, J.R. and Wigler, M. (1984) Genes in *S. cerevisiae* Encoding Proteins with Domains Homologous to the Mammalian ras Proteins. *Cell* **36**, 607-612.

29. Hicks, J., Strathern, J., Klar, A., Ismail, S., and Broach, J.R. (1984) Structure of the *SAD* Mutation and the Location of Control Sites at Silent Mating Type Genes in Yeast. *Mol. Cell. Biol.* **4**, 1278-1285.

30. Kataoka, T., Powers, S., McGill, C., Fasano, O., Strathern, J., Broach, J.R., and Wigler, M. (1984) Genetic Analysis of Yeast *RAS1* and *RAS2* Genes *Cell* **37**, 437-445.

31. McLeod, M., Volkert, F., and Broach, J.R. (1984) Components of the Site-specific Recombination System Encoded by the Yeast Plasmid 2 Micron Circle. *Cold Spring Harbor Symp. Quant. Biol.* **49**, 779-787.

32. Kataoka, T., Powers, S., Cameron, S., Fasano, O., Goldfarb, M., Broach, J.R., and Wigler, M. (1985) Functional Homology of Mammalian and Yeast *RAS* genes. *Cell* **40**, 19-26.

33. Toda, T., Powers, S., Kataoka, T., Brock, D., Cameron, S., Wigler, M., Broach, J.R., Matsumoto, K., Uno, I., and Ishikawa, T. (1985) In Yeast, *RAS* Proteins are Controlling Elements of the Cyclic AMP Effective Pathway. *Cell* **40**, 27-37.

34. Wishart, W.L., Broach, J.R., and Ohtsubo, E. (1985) Tn3 Transposase Protein Binds Specifically to Tn3 Inverted Repeats *Nature* **314**, 556-558.

35. Jayaram, M., Sutton, A., and Broach, J.R. (1985) Properties of REP3: A Cis-Acting Locus Required for Stable Propagation of the Yeast Plasmid 2 Micron Circle. *Mol. Cell. Biol.* **5**, 2466-2475.

36. Sutton, A., and Broach, J.R. Signals for Transcription and Termination in the Yeast Plasmid 2 Micron Circle. *Mol. Cell. Biol.* **5**, 2770-2780 (1985).

37. Wigler, M., Powers, S., Kataoka, T., Toda, T., Fasano, O., Matsumoto, K., Uno, I., Ishikawa, T., and Broach, J. (1985) Function of Yeast RAS Genes In Genetics, Cell Differentiation, and Cancer (P.A. Marks, ed), New York: Academic Press, pp 154-164.

38. Broach, J.R. (1986) New Approaches to a Genetic Analysis of Mitosis *Cell* **44**, 3-4.

39. Wu, L.C.C., Fisher, P., and Broach, J.R. (1986) The REP1 Protein of 2 Micron is Associated with the Nuclear Matrix In *Yeast Cell Biology* (J.B. Hicks, ed), New York: Alan R. Liss, Inc., pp 323-344.

40. Andrews, B.J., McLeod, M., Broach, J.R., and Sadowski, P. (1986) Interaction of the FLP Recombinase of the Yeast 2-micron Plasmid with Mutated Target Sequences *Mol. Cell. Biol.* **6**, 2482-2489.

41. McLeod, M., Craft, S., and Broach, J.R. (1986) Identification of the Crossover Site during FLP-Mediated Recombination in the Yeast Plasmid 2 Micron Circle, *Mol. Cell. Biol.* **6**, 3357-3367.

42. Volkert, F.C., and Broach, J.R. (1986) Site-specific Recombination Promotes Plasmid Amplification in Yeast *Cell* **46**, 541-550.

43. Volkert, F.C., Wu, L.C.C., Fisher, P.A., and Broach, J.R. (1986) Survival Strategies of the Yeast Plasmid 2 Micron Circle In *Extrachromosomal Elements in Lower Eucaryotes* (G.R. Fink, R. Wickner, A. Hinnebusch, L. Mets, I. Gunsalus, and A. Hollaender, eds). New York: Plenum Press, pp 375-396.

44. Volkert, F., and Broach, J.R. (1987) The Mechanism of Propagation of the Yeast Plasmid 2 Micron Circle In *The Biochemistry and Molecular Biology of Industrial Yeast* (G.G Stewart, I. Russell, R.D. Klein, and R.R. Hiebsch, eds) Uniscience Series, CRC Press, Boca Raton, FL, pp 145-170.

45. Wu, L.-C.C., Fisher, P.A., and Broach, J.R. (1987) A Yeast Plasmid Partitioning Protein is a Karyoskeletal Component, *J. Biol. Chem.* **262**, 883-891.

46. Brugge, J.S., Jarosik, G., Anderson, J., Queral-Lustig, A., Fedor, M., Broach, J.R. (1987) Expression of the Rous Sarcoma Virus Transforming Protein, pp60v-src, in yeast cells. *Mol. Cell. Biol.* **7**, 2180-2187.

47. Deschenes, R.J., and Broach, J.R. (1987) Fatty Acylation is Important but not Essential for *Saccharomyces cerevisiae RAS* Function, *Mol. Cell. Biol.* **7**, 2344-2351.

48. Marshall, M., Mahoney, D., Rose, A., Hicks, J.B., and Broach, J.R. (1987) Functional Domains of *SIR4*, A Gene Required for Position Effect Regulation in *Saccharomyces cerevisiae, Mol. Cell. Biol.* **7**, 4441-4452.

49. Som, T., Armstrong, K.A., Volkert, F.C., and Broach, J.R. (1988) Autoregulation of 2-Micron Circle Gene Expression Provides a Model for Maintenance of Stable Plasmid Copy Levels. *Cell* **52**, 27-37.

50. Armstrong, K.A., Som, T., Volkert, F.C., and Broach, J.R. (1988) Regulation of Yeast Plasmid Amplification, In *Cancer Cells* Vol 6. (T. Kelly and B. Stillman, eds). Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, pp. 213-223.

51. Armstrong, K.A., Som, T., Volkert, F.C., Rose, A., and Broach, J.R. (1989) Propagation and Expression of Genes in Yeast Using 2-Micron Circle Vectos. In *Yeast Genetic Engineering* (P.J. Barr, A.J. Brake, and P. Valenzuela, eds). Butterworth Press, Stoneham, MA., pp 165-192.

52. van Zyl, W.H., Wills, N., and Broach, J.R. (1989) A General Screen for Mutants of *Saccharomyces cerevisiae* Deficient in tRNA Biosynthesis *Genetics* **123**, 55-68.

53. Mahoney, D.J., and Broach, J.R. (1989) The *HML* Mating Type Cassette of Yeast Is Regulated by Two Separate but Functionally Equivalent Silencers. *Mol. Cell. Biol.* **9**, 4621-4630.

54. Volkert, F.C., Wilson, D.W., and Broach, J.R. (1989) DNA Plasmids in Yeasts. *Microbiological Reviews* **53**, 299-317.

55. Garrett, S., and Broach, J.R. (1989) Loss of Ras activity in *Saccharomyces cerevisiae* is suppressed by disruptions of a new kinase gene, *YAK1*, whose product may act downstream of the cAMP-dependent protein kinase. *Genes and Development* **3**, 1336-1348.

56. Deschenes, R.J., Stimmel, J.B., Clarke, S., Stock, J. and Broach, J.R. (1989) *RAS2* protein of Saccharomyces cerevisiae is methyl-esterified at its carboxyl terminus. *J. Biol. Chem.* **264**, 11,865-11,873.

57. Rose, A.R., and Broach, J.R. (1990) 2-Micron-Circle-Based Vectors for Propagation and Expression of Cloned Genes in Yeast *Methods Enzymol.* **185**, 234-279.

58. Broach, J.R., and Deschenes, R.J. (1990) The Function of RAS Genes in *Saccharomyces cerevisiae Recent Adv. Cancer Res.* **54**, 79-139.

59. Fedor-Chaiken, M., Deschenes, R., and Broach, J.R. (1990) *SRV2*, a gene required for RAS activation of adenylate cyclase in yeast *Cell* **61**, 329-340.

60. Rose, M.D., and Broach, J.R. (1990) Cloning genes by complementation in yeast, *Methods Enzymol.* **194**, 195-230.

61. Greenwald, I., and Broach, J.R. (1990) Cell fates in *C. elegans*: In Medias *ras*. *Cell* **63**, 1113-1116.

62. Deschenes, R.J., Resh, M., and Broach, J.R. (1990) Acylation and Prenylation of Proteins. *Current Opinion in Cell Biology* **2**, 1108-1113.

63. Dubey, D.D., Davis, L.R., Broach, J.R., Newlon, C.S., and Huberman, J.A. (1991) Evidence suggesting that the *ARS* elements associated with silencers of the yeast mating-type locus, *HML*, do not function as chromosomal DNA replication origins, *Mol. Cell. Biol.* **11**, 5346-5355.

64. Jones, S., and Broach, J.R. (1991) The *CDC25* Protein of *Saccharomyces cerevisiae* Promotes Exchange of Guanine Nucleotide Bound to Ras, *Mol. Cell. Biol.* **11**, 2641-2646.

65. Mahoney, D.J., Marquardt, R., Shei, G.J., Rose, A.B., and Broach, J.R. (1991) Mutations in the *HML* E Silencer of *Saccharomyces cerevisiae* Yield Metastable Inheritance of Transcriptional Repression, *Genes and Development* **6**, 605-615.

66. Broach, J.R. (1991) The Function of RAS in Yeast: Signal Transduction in Search of a Pathway. *Trends in Genetic* **7**, 28-33.

67. Broach, J.R., and Volkert, F.C. (1991) Circular DNA Plasmids of Yeasts In *The Molecular Biology of The Yeast Saccharomyces: Genome Organization, Translation, and Energetics* (J.R. Broach, E.W. Jones, and J.R. Pringle, eds.) Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, pp. 297-332.

68. Garrett, S., Menold, M., and Broach, J.R. (1991) The *Saccharomyces cerevisiae YAK1* gene encodes a protein kinase that is induced by arrest early in the cell cycle. *Mol. Cell. Biol.* **11**, 4045-4052.

69. Broach, J.R. (1991) Ras-regulated signalling processes in *Saccharomyces cerevisiae Curr. Opin. Genet. Devel.* **1**, 370-377.

70. Russo, F.D., Scherson, I., and Broach, J.R. (1992) Direct simulation of yeast 2-micron circle plasmid amplification. *J. Theor. Biol.* **155**, 69-385.

71. Quinlan, J.J., Nickels, J.T., Wu, W.I., Lin, Y.-P., Broach, J.R., and Carman, G.M. (1992) The 45-kDa and 104 kDa forms of phosphatidate phosphatase from *Saccharomyces cerevisiae* are required differentially by phosphorylation via cAMP-dependent protein kinase, *J. Biol. Chem.* **267**, 18013-18020.

72. Van Zyl, W., Huang, W., Sneddon, A.A., Stark, M., Camier, S., Werner, M., Marck, C., Sentenac, A., and Broach, J.R. (1992), Inactivation of the Protein Phosphatase 2A Regulatory Subunit A Results in Morphological and Transcriptional Defects in Yeast. *Mol. Cell. Biol.* **12**, 4946-4959.

73. Weiler, K. and Broach, J.R. (1992) Donor locus selection during *Saccharomyces cerevisiae* mating type interconversion responds to distant regulatory signals *Genetics* **132**, 929-942.

74. Braunstein, M., Rose, A.B., Holmes, S., Allis, C.D., and Broach, J.R. (1993) Transcriptional silencing in yeast is associated with reduced nucleosome acetylation. *Genes and Development* **7**, 592-604.

75. Robinson, M.K., van Zyl, W.H., Phizicky, E.M., and Broach, J.R. (1994) *TPD1* of *Saccharomyces cerevisiae* encodes a protein phosphatase 2C-like activity implicated in tRNA splicing and cell separation. *Mol. Cell. Biol.* **14**, 3634-3645.

76. Haney, S. and Broach, J.R. (1994) Cdc25p, the guanine nucleotide exchange factor for the RAS proteins of *Saccharomyces cerevisiae*, promotes exchange by stabilizing Ras in a nucleotide-free state. *J. Biol. Chem.* **269**, 16541-16548

77. Weiler, K., Szeto, L. and Broach, J.R. (1995) Mutations Affecting Donor Preference During Mating Type Interconversion in *Saccharomyces cerevisiae. Genetics* **139**:1495-1510.

78. Neumann-Silberberg, S., Bhattacharya, S., and Broach, J.R. (1995) Nutrient availability and the *RAS*/cAMP Pathway Both Induce Expression of Ribosomal Protein Genes in *Saccharomyces cerevisiae* but by Different Mechanisms. *Mol. Cell. Biol.* **15**:3187-3196

79. Bhattacharya, S., Chen, L., Broach, J.R., and Powers, S. (1995) Ras membrane targetting is essential for glucose signalling but not for viability in yeast, *Proc. Nat. Acad. Sci., USA*, **92**, 2984-2988.

80. Shei, G.J., and Broach, J.R. (1995) Yeast Silencers Can Act as Orientation-Dependent Gene Inactivation Centers That Respond to Environmental Signals. *Mol. Cell. Biol.* **15**:3496-3506.

81. Robinson, Matthew K., Phizicky, Eric M. and Broach, James R. (1995) The Functions of a Protein Phosphatase 2C in the Yeast *Saccharomyces*. *Advances in Protein Phosphatase* **9**, 187-198.

82. Nickels, J.T. and Broach, J.R. (1996) A ceramide activated protein phosphatase mediates ceramide-induced G1 arrest of *Saccharomyces cerevisiae*. *Genes Devel.* **10**, 382-394.

83. Braunstein, M., Sobel, R.E., Allis, C.D., Turner, B.M., and Broach, J.R. (1996) Efficient Transcriptional Silencing in *Saccharomyces cerevisiae* Requires a Heterochromatin Histone Acetylation Pattern. *Mol. Cell. Biol.* **16**, 4349-4356.

84. Holmes, S., and Broach, J.R. (1996) Silencers are required for inheritance of the repressed state in yeast. *Genes Devel.* **10**, 1021-1032.

85. Holmes, S.G., Braunstein, M., and Broach, J.R. (1996) Transcriptional Silencing of the Yeast Mating Type Genes. In *Epigenetics* (R. Martienssen, A. Riggs, and V.E.A. Russo, eds) Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press, pp. 467-487.

86. Manfredi, J.P., Klein, C., Herrero, J.J., Byrd, D.R., Trueheart, J., Wiesler, W.T., Fowlkes, D.M., and Broach, J.R. (1996) Yeast α mating factor structure-activity relationship derived from genetically selected peptide agonists and antagonists of Ste2p. *Mol. Cell. Biol.* **16**, 4700-4709.

87. Broach, J.R., and Thorner, J. (1996) High throughput screening for drug discovery. *Nature* **384**, s14-16.

88. Holmes, S.G., Rose, A.B., Steuerle, K., Saez, E., Sayegh, S., Lee, Y.M., and Broach, J.R. (1997) Hyperactivation of the silencing proteins, Sir2p and Sir3p, causes chromosome loss. *Genetics* **145**:605-614.

89. Szeto, L., and Broach, J.R. (1997) Role of α2 protein in donor locus selection during mating type interconversion. *Mol. Cell. Biol.* **17**:751-759.

90. Braunstein, M., Holmes, S.G., and Broach, J.R. (1997) Heterochromatin and Regulation of Gene Expression in *Saccharomyces cerevisiae*. In *Nuclear Organization, Chromatin Structure and Gene Expression* (R. van Driel and A.P. Otte, eds) Oxford University Press, pp. 250-275.

91. Szeto, L., Fafalios, M.K., Zhong, H., Vershon, A.K., and Broach, J.R. (1997) α2p controls donor preference during mating type interconversion in yeast by inactivating a recombination enhancer on chromosome III. *Genes Devel.* **11**, 1899-1911.

92. Bi, X. and Broach, J. R. (1997) DNA in Transcriptionally Silent Chromatin Assumes a Distinct Topology that is Sensitive to Cell Cycle Progression. *Mol. Cell. Biol.* **17**, 7077-7087.

93. Mandala, S. Thornton, R., Tu, Z., Kurtz, M., Nickels, J., Broach, J., Menzeleev, R., and Spiegel, S. (1998) Spingosine 1-phosphate phosphatase, a key regulator of sphingolipid metabolism and stress response. *Proc. Nat. Acad Sci., USA* **95**, 150-155.

94. Epstein, C.B., Attiyeh, E.F., Hobson, D.A., Silver, A.L., Broach, J.R., and Levine, A.J. (1998) p53 mutations isolated in yeast based on loss of transcription factor activity: similarities and differences from p53 mutations detected in human tumors, *Oncogene* **16**, 2115-2122.

95. Klein C., Paul, J., Sauvé, K., Ransom, J., Trueheart, J., Manfredi, J., Broach, J. and Murphy, A. (1998) Identification of a Surrogate Agonist for the Human FPRL-1 Receptor by Autocrine Selection in Yeast, *Nature Biotechnology* **16**, 1334-1337.

96. Silverman, L., Campbell, R. and Broach, J.R. (1998) New assay technologies for high throughput screening. *Curr. Opin. Chem. Biol.* **2**, 153-157.

97. Jiang, Y., Davis, C. and Broach, J.R. (1998) Efficient Transition to Growth on Fermentable Carbon Sources in *Saccharomyces cerevisiae* Requires Signaling through the Ras Pathway, *EMBO Journal* **17**, 6942-6951.

98. Bi, X. and Broach, J.R. (1999) Cell type determination in yeast, in *Development – Genetics, Epigenetics and Environmental Regulation* (E. Russo, D. Cove, L. Edgar, R. Jaenisch and R. Salamani, eds.) Springer-Verlag, Heidelberg, pp 49-66.

99. Meluh, P.B., and Broach, J.R. (1999) Immunological analysis of yeast chromatin. *Methods Enzymol.* **304**, 414-430.

100. Jiang, Y., and Broach, J.R. (1999) TOR Proteins and Protein Phosphatase 2A Reciprocally Regulate Tap42 in Controlling Cell Growth in Yeast, *EMBO Journal* **18**: 2782-2792.

101. Bi, X., and Broach, J.R. (1999) UAS_{rpg} Can Function as a Heterochromatin Boundary Element in Yeast, *Genes Devel.* **13**: 1089-1101.

102. Bi, X., Braunstein M., Shei, G.-J., and Broach, J. R. (1999) The Yeast *HML* I Silencer Defines a Heterochromatin Domain Boundary by Directional Establishment of Silencing, *Proc. Natl. Acad. Sci., USA*, **96**: 11934-11939.

103. Wu, J., Tolstykh, T., Lee, J.Y., Boyd, K., Stock, J., and Broach, J.R. (2000) Carboxyl methylation of the protein phosphatase 2A catalytic subunit promotes its functional association with regulatory subunits in vivo. *EMBO Journal* **19**: 5672-5681.

104. Nielsen, K.H., Gredsted, L., Broach, J.R., and Willumsen, B.M. (2001) Sensitivity of wild type and mutant Ras alleles to ras specific exchange factors: Identification of factor specific requirements. *Oncogene* **20**: 2091 – 2100.

105. Johnston, S.D., Enomoto, S., Schneper, L., McClellan, M.C., Twu, F., Montgomery, N., Haney, S., Broach, J.R., and Berman, J. (2001) CAC3(MSI1) suppression of RAS2(G19V) is independent of chromatin assembly factor I and mediated by NPR1. *Mol. Cell. Biol.*, **21**: 1784-1794.

106. Bi, X. and Broach, J.R. (2001) Chromosomal boundaries in S. cerevisiae. *Curr. Opin. Dev. Biol.*, **11**: 199-204.

107. Haney, S., Xu, J., Lee, S.-Y., Broach, J.R., and Manfredi, J.P. (2001) Genetic selection in Saccharomyces of mutant mammalian adenylyl cyclases with elevated basal activities. *Mol. Gen. Genet.*, 265: 1120-1128.

108. Simon, P., Houston, P. and Broach, J.R. (2002) Directional bias during mating type switching in Saccharomyces is independent of chromosomal architecture. *EMBO J.*, 21: 2282-2291

109. Zhang, W.B., Navenot, J.M., Haribabu, B., Tamamura, H., Hiramatu, K., Omagari, A., Pei, G., Manfredi, J.P., Fujii, N., Broach, J.R., Peiper, S.C. (2002) A point mutation that confers constitutive activity to chemokine receptor CXCR4 reveals T140 is an inverse agonist and AMD3100 and ALX40-4C are weak partial agonists. *J. Biol. Chem.*, 277: 24515-24521.

110. Katrin Düvel, Arti Santhanam, Stephen Garrett and James R. Broach (2002) Multiple Roles of Tap42 in Mediating Rapamycin-InducedTranscriptional Changes in Yeast, *Mol. Cell*, in press.

111. Qun Yu, Runxiang Qiu, Travis B. Foland, Dan Griesen, Carl S. Galloway, Ya-Hui Chiu, James R. Broach and Xin Bi (2002) The roles of Rap1p and related factors in establishing barriers to the spread of transcriptional silencing in yeast, *Mol. Cell. Biol.*, in press.

112. Lisa Schneper, Alicia Krauss, Ryan Miyamoto, Shirley Fang, and James R. Broach (2002) The Ras/Protein Kinase A Pathway Acts in Parallel with the Mob2/Cbk1 Pathway to Effect Cell Growth and Proper Bipolar Bud Site Selection, *Mol. Cell. Biol.*, in press.

113. Katrin Düvel and James R. Broach (2002) The Role of Phosphatases in TOR Signaling in Yeast. Tor (G. Thomas, M. Hall, eds.) Academic Press, in press.

114. James R. Broach (2002) Landmark papers on the control of cell growth in yeast. In Landmark papers in yeast molecular biology. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, in press.

B. Books:

THE MOLECULAR BIOLOGY OF THE YEAST SACCHAROMYCES: Life Cycle and Inheritance (J.N. Strathern, E.W. Jones, and J.R. Broach, eds.) Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY (1981).

THE MOLECULAR BIOLOGY OF THE YEAST SACCHAROMYCES: Metabolism and Gene Expression (J.N. Strathern, E.W. Jones, and J.R. Broach, eds.) Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY (1982).

THE MOLECULAR AND CELLULAR BIOLOGY OF THE YEAST SACCHAROMYCES: Genome Organization, Translation, and Energetics (J.R. Broach, E.W. Jones, and J.R. Pringle, eds.) Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY (1991).

THE MOLECULAR AND CELLULAR BIOLOGY OF THE YEAST SACCHAROMYCES: Gene Expression (E.W. Jones, J.R. Pringle, and J.R. Broach, eds.) Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY (1992).

THE MOLECULAR AND CELLULAR BIOLOGY OF THE YEAST SACCHAROMYCES: Cell Cycle and Cell Biology (J.R. Pringle, J.R. Broach, and E.W. Jones, eds.) Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY (1997).

Current Opinion in Genetics and Development: Oncogenes and cell proliferation. Vol 5, No. 1 (A.J. Levine and J.R. Broach, eds) Current Biology, Ltd, London (1995).

Current Opinion in Genetics and Development: Oncogenes and cell proliferation. Vol 7, No. 2 (A.J. Levine and J.R. Broach, eds) Current Biology, Ltd, London (1997).